Remarks

Entry of the above-noted amendments, reconsideration of the application, and allowance of all claims pending are respectfully requested. By this amendment, claims 1-2, 6-10, 13, 15-19, 22-25, 28, and 30-32 are amended and claims 41-42 are added. These amendments to the claims constitute a bona fide attempt by applicants to advance prosecution of the application and obtain allowance of certain claims, and are in no way meant to acquiesce to the substance of the rejections. Support for the amendments can be found throughout the specification (e.g., page 5, line 18, to page 6, line 9; page 7, line 17, to page 8, line 3; page 8, lines 12-19), drawings (e.g., FIGS. 1-2), and claims and thus, no new matter has been added. Claims 1-4 and 6-42 are pending.

Claim Objections:

Claims 14 and 25 are objected to because of informalities. The Office Action alleges that the word "microspheres" should be "microballoons." Claim 25 has been amended to recite "microballoons" for antecedent basis to claim 23. The specification (e.g., page 7, line 17, to page 8, line 19) recites both the terms "microspheres" and "microballoons."

Withdrawal of the objection to claims 14 and 25 is therefore respectfully requested.

Claim Rejections - 35 U.S.C. §103:

Claims 1-4 and 6-40 are rejected under 35 U.S.C. §103(a) as being unpatentable over Cordova et al. (U.S. Patent No. 5,546,482; "Cordova") in view of Brocker et al. (European Patent Application No. 0660082; "Brooker"). This rejection is respectfully, but most strenuously, traversed.

Applicants respectfully submit that the Office Action's citations to the applied references, with or without modification or combination, assuming, *arguendo*, that the modification or

combination of the Office Action's citations to the applied references is proper, do not teach or suggest one or more elements of the claimed invention, as further discussed below.

For explanatory purposes, applicants discuss herein one or more differences between the Office Action's citations to the applied references and the claimed invention with reference to one or more parts of the applied references. This discussion, however, is in no way meant to acquiesce in any characterization that one or more parts of the Office Action's citations to the applied references correspond to the claimed invention.

Applicants respectfully submit that the Office Action's citations to the applied references do not teach or suggest one or more elements of the claimed invention. A careful reading of the Office Action's citations to the applied references fails to teach or suggest, for example, a polymeric potting material that encapsulates a fiber optic sensing coil, wherein the fiber optic sensing coil comprises a first coil portion and a second coil portion, wherein the first coil portion is adjacent to the second coil portion, wherein the polymeric potting material comprises a plurality of introduced voids that promote an increase in compressibility of the polymeric potting material, wherein one or more of the plurality of introduced voids are located between the first coil portion and the second coil portion, as recited in applicants' independent claim 1.

Cordova discloses a sensor coil for a fiber optic gyroscope that is potted in polymer-based material. The polymer-based potting compound does not have any introduced voids that promote an increase in compressibility of the polymer-based potting compound. This point is even conceded by the Office Action (page 3):

> [Cordova] is silent with respect to the polymeric potting material comprising a plurality of introduced voids that promote an increase in compressibility of the polymeric potting material wherein upon introduction of an applied force to a portion of the polymeric potting material, the introduced voids compress to allow a portion of the polymeric material to absorb a portion of the applied force

> [to] promote a decrease of a reaction force from a portion of the polymeric potting material to the fiber optic sensing coil. It is also silent with respect to the plurality of introduced voids compressing to decrease a strain on the fiber optic sensing coil wherein the decrease in strain on the fiber optic sensing coil promotes a decrease in a bias error of the fiber optic sensing coil.

So, the Office Action's citation to Cordova fails to satisfy at least one of the limitations recited in applicants' independent claim 1.

The shortcomings of the Office Action's citation to Cordova relative to certain elements of the claimed invention have been discussed above. The Office Action proposes a combination of the citation to Cordova with a citation to Brooker. However, the Office Action's citation to Brooker does not overcome the deficiency of the Office Action's citation to Cordova. Applicants respectfully submit that the proposed combination of the Office Action's citation to Cordova with the Office Action's citation to Brooker fails to provide the required approach, assuming, *arguendo*, that the combination of the Office Action's citation to Cordova with the Office Action's citation to Brooker is proper.

Brooker discloses a sensing coil of a fiber optic gyroscope surrounded by a gel. To accommodate expansion and contraction of the gel with changing temperature, Brooker discloses one embodiment that embeds one or more resilient compressible elements within the gel. For example, air bubbles may be entrained in the gel. However, the Office Action's citations to Brooker do not disclose any introduced voids located between a first coil portion and a second coil portion.

FIGS. 3a, 3b, 3c, and 3d illustrate the sequential stages in the assembly of the sensing coil, gel, and housing into a unit. FIGS. 3a and 3b show that the sensing coil is a fully wound unit before the gel is applied to the sensing coil. The wound sensing coil is then placed into the housing. FIG. 3c shows the gel filling the housing and covering the outer surface of the sensing

coil. The gel acts as a buffer between the housing and the sensing coil as a whole. The gel does NOT buffer between individual portions of the sensing coil. Furthermore, Brooker discloses (column 7, lines 6-9): "The fiber that forms the coil 10 is preferably coated with an oil or other lubricant to facilitate sliding movement of adjacent windings over each other as the coil relaxes after winding." Since Brooker discloses that a lubricant is used to allow one winding of the coil to slide against another adjacent winding of the coil, this passage shows that the gel is NOT located between individual portions of the sensing coil but only on the outer surface of the coil as a whole. Therefore, the Office Action's citations to Brooker do not disclose any introduced voids located between a first coil portion and a second coil portion.

FIG. 5 discloses another embodiment of the sensing coil. In the embodiment of FIG. 5, a layer of gel is applied to the surface of a rigid cylindrical form. An optical fiber coil is then wound on gel that covers the rigid cylindrical form. The gel acts as a buffer between the rigid cylindrical form and the optical fiber coil as a whole. The gel does NOT buffer between individual portions of the sensing coil. Therefore, the Office Action's citations to Brooker do not disclose any introduced voids located between a first coil portion and a second coil portion.

FIG. 6 discloses yet another embodiment of the sensing coil. In the embodiment of FIG. 6, the coil rests on a mounting surface within the housing, and the gel otherwise surrounds the outer surface of the coil. The gel acts as a buffer between the housing and the coil as a whole. The gel does NOT buffer between individual portions of the coil. Therefore, the Office Action's citations to Brooker do not disclose any introduced voids located between a first coil portion and a second coil portion.

The Office Action's citations to Cordova and Brooker both fail to meet at least one of applicants' claimed features. For example, there is no teaching or suggestion in the Office

Action's citations to Cordova or Brooker of a polymeric potting material that encapsulates a fiber optic sensing coil, wherein the fiber optic sensing coil comprises a first coil portion and a second coil portion, wherein the first coil portion is adjacent to the second coil portion, wherein the polymeric potting material comprises a plurality of introduced voids that promote an increase in compressibility of the polymeric potting material, wherein one or more of the plurality of introduced voids are located between the first coil portion and the second coil portion, as recited in applicants' independent claim 1.

Furthermore, the Office Action does not allege that the art of record provides any teaching, suggestion, or incentive for modifying the citations to Cordova and/or Brooker to provide the claimed configuration.

For all the above reasons presented above with reference to claim 1, independent claims 1, 15, 17, and 31 presented herewith are believed neither anticipated nor obvious over the art of the record. The dependent claims are believed allowable for the same reasons as the independent claims 1, 15, 17, and 31, as well as for their own additional characterizations.

For example, claim 23 states: "wherein the plurality of introduced voids comprise a plurality of hollow elastomeric microballoons, wherein the plurality of hollow elastomeric microballoons comprise thin polymer walls that encapsulate a gas to allow for compression of the plurality of hollow elastomeric microballoons." Brooker discloses loading the gel with either solid or hollow silica microspheres to reduce the difference between the specific gravities of the gel and the coil and thereby adjust the resonant frequencies of the coil-gel combination. The loading of the gel also increases the viscosity and stiffness of the gel. The microspheres are formed from silica which may not be sufficiently compressible to serve the same purpose of compression as microballoons with thin polymer walls.

Also, claim 25 states: "wherein a coupling agent serves to adhere the thin polymer walls of the plurality of hollow elastomeric microballoons with a resin of the polymeric potting material." The Office Action's citations to Brooker simply do not disclose a use of a coupling agent to adhere microballoons to the gel of Brooker.

Withdrawal of the § 103 rejection is therefore respectfully requested.

In view of the above amendments and remarks, allowance of all claims pending is respectfully requested. If a telephone conference would be of assistance in advancing the prosecution of this application, the Examiner is invited to call applicant's attorney.

Respectfully submitted,

Robert J. Brill
Attorney for Applicants
Reg. No. 36,760

Dated: July 7, 2005

PATTI & BRILL, LLC
Customer Number 32205